

Application for United States Letters Patent

*Direct Write™ System*

Docket No. ODC2000-1-CIPB

Filing Date: 5 February 2002

## Direct Write™ System

### ABSTRACT OF THE DISCLOSURE

Methods and apparatus for the deposition of a source material (10) are disclosed. An atomizer (12) renders a supply of source material (10) into many discrete particles. A force applicator (14) propels the particles in continuous, parallel streams of discrete particles. A collimator (16) controls the direction of flight of the particles in the stream prior to their deposition on a substrate (18). In an alternative embodiment of the invention, the viscosity of the particles may be controlled to enable complex depositions of non-conformal or three-dimensional surfaces. The invention also includes a wide variety of substrate treatments which may occur before, during or after deposition. In yet another embodiment of the invention, a virtual or cascade impactor may be employed to remove selected particles from the deposition stream.